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CLAIMS:

1. A telemetry system for measuring one or more parameters within a transport container and transmitting a signal indicating the value or values of the one or more measured parameters, or the status of the respective  
5 transport container, over a significant distance via at least one communications network, the system comprising:
- a) a receiving station connected to the communications network;
  - b) monitoring means for receiving the signal and indicating the value or any one of the values represented by the signal, or the transport container  
10 status; and
  - c) a mobile monitoring sub-system mounted on or within the transport container comprising:
    - i) parameter measurement means to measure the respective parameters;
    - 15 ii) signal generating means to generate a signal for transmission indicating the value or values of the one or more measured parameters, or a status of the transport container, wherein the signal generating means holds data tolerance information in relation to the respective transport container and, when the signal generated by the signal generating means is to be  
20 transmitted, the signal generating means examines the value or values of the one or more measured parameters and if they are in tolerance, generates a status signal indicating that the system is operating correctly and all parameters are in tolerance and if they are not in tolerance, the signal generating means generates the signal representing the value or values of the  
25 one or more measured parameters; and
    - iii) local communication means for transmitting the signal via the at least one communications network to the receiving station and the monitoring means.
2. The telemetry system of claim 1, wherein the local communication  
30 means includes a local transceiver which collects the signals from each mobile monitoring sub-system and transmits the signals to the receiving station via the at least one communications network.
3. The telemetry system of claim 2, wherein the system measures one or more parameters within one of a plurality of transport containers located in  
35 close proximity to one another during transit, and wherein each of the plurality of transport containers includes one of the mobile monitoring sub-

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systems, each of the mobile monitoring sub-systems being capable of receiving information transmitted from others of the mobile monitoring sub-systems, and one of the mobile monitoring sub-systems is a master mobile monitoring sub-system for receiving signals from others of the mobile monitoring sub-systems, whereby the master mobile monitoring sub-system receives the information signals from said other ones of the mobile monitoring sub-systems and transmits them to the local transceiver.

4. The telemetry system of claim 2 or 3, wherein the at least one communications network is a land based communications network and the local transceiver is a relay transceiver connected to the land based network.

5. The telemetry system of claim 2 or 3, wherein the at least one communications network includes a satellite and the local transceiver is a relay transceiver, arranged only to transmit on an interrogation from the satellite.

6. The system as claimed in claim 2 or 3, wherein the at least one communications network includes a satellite and the local transceiver is a relay transceiver arranged to initiate communication with a transponder mounted on the satellite .

7. The system as claimed in any one of claims 2 to 6, wherein the local communication means comprises a low power transmitter in each monitoring sub-system which communicates with the local transceiver.

8. The system as claimed in any one of claims 2 to 7, wherein the transport container is a shipping container of the type used for sea transportation.

9. The system as claimed in any one of claims 2 to 8, wherein a plurality of transport containers are fitted with monitoring sub-systems and each transmits information, as required, to others of the transport containers similarly fitted with monitoring sub-systems, one of the transport containers is fitted with a master monitoring sub-systems for receiving signals from the monitoring sub-systems of other transport containers and the master monitoring sub-system collects all of the information signals from all of the other monitoring sub-systems the information signals and transmits to the transceiver which then transmits the information signals to the communications network.

10. The system as claimed in any one of claims 2 to 9, wherein at least some of the monitoring *sub-systems* located in the transport containers are

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interconnected to one another or to the master monitoring *sub-system* by wire connections.

11. The system as claimed in any one of claims 2 to 9, wherein at least  
5 some of the monitoring *sub-systems* located in the transport containers are in communication with each other and the master monitoring *sub-systems* via wireless communication means.

12. The system as claimed in any one of the claims 2 to 11, wherein  
10 monitoring functions of the mobile monitoring sub-systems include an input for monitoring one or more of, temperature, humidity, air flow, air pressure, percentage atmospheric content of oxygen, or ethylene in air in the transport container, the location, shock, power supply parameters, filtration operation, illumination levels, security breaches, surveillance camera operation and motion detection.

13. The system of claim 12, wherein measured parameters are used to  
15 predict a projected state of a perishable cargo at the end of a journey, from a history of the conditions to which the cargo has been subjected up to the current point in the journey.

14. The system as claimed in any one of claims, 2 to 13, wherein the  
20 measurement of the one or more parameters by a stand alone data logging device, causes one or more parameter values to be measured, the data logging device including measurement means for measuring the parameter values, storage means to record the measured parameter values and control means to periodically cause the measurement to be made and recorded in the storage means.

25 15. The system as claimed in claim 14, wherein the parameters measured are temperature and humidity.

16. The system as claimed in claim 14, wherein the storage means is a digital memory.

30 17. The system as claimed in claim 14, wherein the storage means is a magnetic storage device.

18. The system as claimed in claim 14, wherein the storage means is a floppy disk drive.

35 19. The system as claimed in any one of claims 14 to 18, wherein the control means includes an input/output means for receiving a trigger signal to trigger the down loading of data and in response to the trigger signal, and

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generating an output signal representing some or all of the data held in the storage means.

20. The system as claimed in claim 19, wherein the control means records the parameter values at regular intervals.

5 21. The system of claim 20, wherein the control means records the parameter values at intervals in the range of once every 10 minutes to 2 hours.

22. The system as claimed in any one of claims 14 to 21, wherein the control means comprises a control unit connected to the data logging device and to the local communication means and controls transmission via the at least one transceiver.

23. The system of claim 22, wherein the control unit periodically initiates downloading of the data from the data logging device and initiates a transmission automatically.

15 24. The system of claim 22, wherein the control unit responds to a signal transmitted to the communication means via the transceiver to initiate unloading of the data from the data logging device and transmission of the data to the receiving station.

25. The system as claimed in any one of claims 1 to 24, wherein the local communication means is a transmitter arranged to transmit to a local transceiver which in turn relays the signal to the receiving station via pre-existing communications channels.

26. The system as claimed in claim 25, wherein the pre-existing communications system includes a communications channel associated with a satellite navigation system.

27. The system as claimed in claim 25, wherein the pre-existing communications system includes a communications channel of a satellite telephone system.

28. The system of claim 25, wherein the pre-existing communications system is a switched telephone network.

29. A remote sensing unit for a telemetry system, the remote sensing unit comprising:

parameter measurement means to measure a parameter or parameters of interest;

35 control means which holds data tolerance information for the or each parameter and when parameter data is provided by the parameter

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measurement means, the control means examines the parameter data and if it is within tolerance by comparison with the data tolerance information, indicates that the system is operating correctly and all data is in tolerance;

5 signal generating means to generate a signal indicating the status of the parameter data, the signal comprising:

i) if the parameter data is in tolerance, a status code indicating the in tolerance status of the parameters; and

ii) if the parameter data is out of tolerance, the parameter data; ;  
and

10 communication means for transmitting the signal to a relay transceiver, located in close proximity to the communication means, the relay transceiver being in communication with a communication network for further transmission via the communication network.

30. The sensing unit as claimed in claim 29, wherein communication  
15 means is a low power transmitter which communicates with the relay transceiver.

31. The sensing unit as claimed in claim 29 or 30, wherein monitoring  
20 functions of the remote sensing unit include, an input for monitoring one or more of, temperature, humidity, air flow, air pressure, percentage atmospheric content of oxygen, or ethylene in air, location, shock, power supply parameters, filtration operation, illumination levels, security breaches, surveillance camera operation and motion detection.

32. The sensing unit as claimed in any one of claims, 29 to 31, wherein the  
25 measurement of the one or more parameters by a stand alone data logging device causes one or more parameter values to be measured, the data logging device including measurement means for measuring the parameter values, storage means to record the measured parameter values and wherein the control means periodically causes the measurement to be made and recorded in the storage means.

30 33. The sensing unit as claimed in claim 32, wherein the parameter measures are temperature and humidity.

34. The sensing unit as claimed in claim 32, wherein the storage means is a digital memory.

35 35. The sensing unit as claimed in claim 32, wherein the storage means is a magnetic storage device.

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36. The sensing unit as claimed in claim 32, wherein the storage means is a floppy disk drive.

37. The sensing unit as claimed in any one of claims 29 to 36, wherein the control means includes an input/output means for receiving a trigger signal to trigger the down loading of data and in response to the trigger signal, and generating an output signal representing some or all of the data held in the storage means.

38. The sensing unit as claimed in claim 37, wherein the control means records the parameter values at regular intervals.

39. The sensing unit of claim 38, wherein the control means records the parameter values at intervals in the range of once every 10 minutes to 2 hours.

40. The sensing unit as claimed in any one of claims 32 to 39, wherein the control means comprises a control unit connected to the data logging device and to the communication means and controls transmission via the at least one transceiver.

41. The sensing unit of claim 40, wherein the control unit periodically initiates downloading of the data from the data logging device and initiates a transmission automatically.

42. The sensing unit of claim 41, wherein the control unit responds to a signal transmitted to the communication means via the transceiver to initiate unloading of the data from the data logging device and transmission of the data to the receiving station.

43. A control unit arranged to be connectable to a data logging device, the control unit comprising:

trigger signal generating means to trigger the data logging device to unload data;

data input means to receive data from the connected data logging device;

a data storage means to hold data tolerance information whereby when the data is unloaded from the data logging device, the control unit examines the unloaded data and determines if it is in tolerance when compared with the data tolerance information;

signal generating means to generate a signal indicating the status of the unloaded data, the signal comprising:

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i) if the data is in tolerance, a status code indicating the in tolerance status of the data; and

ii) if the data is out of tolerance, the unloaded data encoded in a format suitable for transmission over a communications network; and

5 input/output means arranged for connection to a communications device for communicating the signal generated by the signal generating means to the communication device.

44. The control unit as claimed in claim 43, wherein monitoring functions of the data logging device include, an input for monitoring one or more of, 10 temperature, humidity, air flow, air pressure, percentage atmospheric content of oxygen, or ethylene in air, a current location, shock, power supply parameters, filtration operation, illumination levels, security breaches, surveillance camera operation and motion detection.

45. The control unit of claim 43 or 44, wherein the monitoring functions of 15 the data logging device include an input for measuring power supply conditions of environmental control equipment supporting or forming part of a consignment, shaft speed of the vessel, water purity in a bilge, pollution levels, status of pollution control equipment, machinery discharge, sewage outflows, discharge of ships' ballast, noise, air quality, water quality, vessel 20 position (eg; GPS), surveillance cameras, locking and unlocking of controlled spaces, and entry and exit of controlled spaces.

46. The control unit as claimed in any one of claims 43 to 45, wherein the measurement of the one or more parameters by the data logging device, includes measurement means for measuring one or more parameter values, 25 and storage means to record the measured parameter values, the data logging device being responsive to the control unit to periodically cause the measurement to be made and recorded in the storage means.

47. The control unit as claimed in claim 46, wherein the parameters measured are temperature and humidity.

30 48. The control unit as claimed in claim 46, wherein the storage means is a digital memory.

49. The control unit as claimed in claim 46, wherein the storage means is a magnetic storage device.

35 50. The control unit as claimed in claim 46, wherein the storage means is a floppy disk drive.

TOGETHER WITH FIGS 1-10

51. The control unit as claimed in any one of claims 43 to 50, further comprising an input/output means for receiving a trigger signal to trigger the down loading of data and generating an output signal representing some or all of the data held in the storage means in response to the trigger signal.

5 52. The control unit as claimed in claim 51, wherein the control unit causes the data logging device to record the parameter values at regular intervals.

53. The control unit of claim 52, wherein the data logging device records the parameter values at intervals in the range of once every 10 minutes to  
10 2 hours.

54. The control unit as claimed in any one of claims 43 to 53, comprising a communication control means connected to the data logging device and to the communications device which controls communication of the signal generated by the signal generating means to the communication device.

15 55. The control unit of claim 54, wherein the trigger signal generating means periodically initiates downloading of the data from the data logging device and the communication control means initiates a transmission over a communication network automatically.

20 56. A telemetry system for measuring one or more parameters within a transport vehicle or vessel and transmitting a signal indicating the value or values of the one or more measured parameters, or the status of the respective transport vehicle or vessel, over a significant distance via at least one communications network, the system comprising:

25 a) a receiving station connected to the communications network;  
b) monitoring means for receiving the signal and indicating the value or any one of the values represented by the signal, or the transport vehicle or vessel status; and

c) a mobile monitoring sub-system mounted on or within the transport vehicle or vessel comprising:

30 i) parameter measurement means to measure the respective parameters;

ii) signal generating means to generate a signal for transmission indicating the value or values of the one or more measured parameters, or a status of the transport vehicle or vessel, wherein the signal generating means  
35 holds data tolerance information in relation to the respective transport vehicle or vessel and, when the signal generated by the signal generating



means is to be transmitted, the signal generating means examines the value or values of the one or more measured parameters and if they are in tolerance, generates a status signal indicating that the system is operating correctly and all parameters are in tolerance and if they are not in tolerance, the signal generating means generates the signal representing the value or values of the one or more measured parameters; and

iii) local communication means for transmitting the signal via the at least one communications network to the receiving station and the monitoring means.

57. The telemetry system of claim 56, wherein the local communication means includes a local transceiver which collects the signals from each mobile monitoring sub-system and transmits the signals to the receiving station via the at least one communications network.

58. The telemetry system of claim 57, wherein the system measures one or more parameters within close proximity of one of a plurality of mobile monitoring sub-systems located around the transport vehicle or vessel, each of the mobile monitoring sub-systems being capable of receiving information transmitted from others of the mobile monitoring sub-systems, and one of the mobile monitoring sub-systems is a master mobile monitoring sub-system for receiving signals from others of the mobile monitoring sub-systems, whereby the master mobile monitoring sub-system receives the information signals from said other ones of the mobile monitoring sub-systems and transmits them to the local transceiver.

59. The telemetry system as claimed in any one of claims 56 to 58, wherein the at least one communications network is a land based communications network and the local transceiver is a relay transceiver connected to the land based network.

60. The telemetry system as claimed in any one of claims 56 to 58, wherein the at least one communications network includes a satellite and the local transceiver is a relay transceiver, arranged only to transmit on an interrogation from the satellite.

61. The system as claimed in any one of claims 56 to 58, wherein the at least one communications network includes a satellite and the local transceiver is a relay transceiver arranged to initiate communication with a satellite mounted transponder.

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62. The system as claimed in any one of claims 56 to 61, wherein the local communication means comprises a low power transmitter in each monitoring sub-system which communicates with the local transceiver.

5 63. The system as claimed in any one of claims 56 to 61, wherein the parameter measurement means and the signal generating means are located in a fixed location in the transport vehicle or vessel and the communications means is a low power transmitter which communicates with the transceivers.

10 64. The system of claim 63, wherein the parameter measurement means and the signal generating means are mounted in an equipment space of a ship.

65. The system of claim 64, wherein the parameter measurement means measures ballast water quality and status of ballast dumping valves.

15 66. The system of claim 63, 64 or 65, wherein *the* monitoring functions of *the* mobile monitoring *sub-systems* include an input for measuring power supply conditions of environmental control equipment or equipment supporting or forming part of a consignment, shaft speed of the vessel, water purity in a bilge, filtration operation, illumination levels, pollution levels, security breaches, surveillance camera operation or motion detection, status of pollution control equipment, machinery discharge, sewage outflows,  
20 discharge of ships' ballast, noise, air quality, water quality, vessel position, surveillance cameras, locking and unlocking of controlled spaces, and entry and exit of controlled spaces.

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